

Name: _____

Date: _____

s17 Geometric Series Exam (Example v101)

Question 1

Consider the partial geometric series represented below with first term $a = 800$, common ratio $r = \left(\frac{13}{25}\right)^{1/10}$, and $n = 10$ terms.

$$S = 800 + 749.36 + 701.92 + 657.49 + 615.87 + 576.89 + 540.37 + 506.17 + 474.12 + 444.11$$

We can multiply both sides by r .

$$rS = 749.36 + 701.92 + 657.49 + 615.87 + 576.89 + 540.37 + 506.17 + 474.12 + 444.11 + 416$$

What is the value of $S - rS$?

Question 2

Consider the geometric series shown below, using ellipsis notation to indicate a continuation of the pattern without writing every term.

$$S = 6 + 6(3) + 6(3)^2 + 6(3)^3 + \cdots + 6(3)^{66} + 6(3)^{67} + 6(3)^{68} + 6(3)^{69}$$

Identify the initial term, the common ratio, and the number of terms.

Question 3

Write a proof for the partial geometric series formula.

- a. Define the variables.
- b. Write the sum using variables and ellipsis notation. You can implicitly assume the number of terms is more than the number of terms you choose to write.
- c. Using annotated algebraic manipulation, produce the partial geometric series formula.